Nam Theun 2 Hydropower Project Update: Downstream Program

November 2017

This note explains recent updates on the Project's Downstream Program, one of five areas of the Nam Theun 2 Social and Environment Project. Notes about the Resettlement Implementation Period and the Revenue Management program were previously posted here. *Notes about the other two areas (Hydropower Operations, and the Nakai Nam Theun watershed) will be forthcoming over the coming months. The notes provide additional detail to the World Bank's Implementation Status and Results Report that can be found* here. *Questions may be posted to* laos@worldbank.org.

Nam Theun 2 began commercial operations in December 2010, which added additional (330m^3/s) flow to the Xe Bang Fai River (XBF), downstream of the powerhouse. Anticipated potential impacts included erosion of riverbanks, loss of riverside gardens and man-made structures on the riverbanks, a decrease in fish catch, and altered water quality. To respond to these potential impacts, a Downstream Program (DSP) was developed, the objective of which was to monitor and address impacts of project-induced changes to flow in the XBF on fish populations and downstream communities.

A recent review of the status of the downstream areas highlighted further improvements that could be made, which has resulted in a greater focus on livelihood support. The various aspects of the DSP, including past activities and current status, are detailed in the sections below.

The DSP covers the following areas:

a) Downstream of power station covering about 100,000 people in 159 villages, including 60,000 people in 92 villages along the Nam Katang, Nam Gnom and Xe Bang Fai (XBF) rivers;

b) Downstream of the Nakai Dam, including about 15,000 people in 37 villages located along tributaries of the stretch of Nam Theun river between Nakai Dam and the head pond of Theun Hinboun hydropower project; and

c) Upstream of the Nakai Reservoir, covering about 7,000 people in 31 villages located along the Nam Theun or its tributaries upstream of the Nakai Reservoir.

The DSP was implemented between 2006 and 2012 by the Nam Theun 2 Power Company (NTPC), with a budget of US$16 million. NTPC allocated an additional US$2.3 million as part of a one-year transition to management by the Government of Lao PDR (GOL) in 2012. After meeting its Concession Agreement obligations, NTPC handed over management of the DSP to the GOL at the end of 2012, at which time the GOL took over responsibility for financing and implementing work programs in the downstream areas.

Livelihoods: One of the aims of the DSP is to restore the livelihoods of project-affected people in the downstream areas and to maintain the levels of protein in their diets. The program compensated families that lost their riverside gardens resulting from higher river flows. The DSP also included a range of livelihood support and trainings, including alternative improved water supplies, improved rice cultivation, cash crop and livestock production, off-farm income-generating activities (such as textile handicrafts and family businesses), and aquaculture (such as community conservation areas for fish spawning and frog raising). The DSP also established and funded Village Income Restoration Funds (VIRFs), which financed investments in livelihood activities by the communities. Community members used these loans mainly to invest in improved rice and cash crop production, utilizing water available from the existing irrigation schemes.

A socioeconomic survey conducted in 2014, which assessed progress on livelihood restoration, showed two contrasting trends. Consumption levels, which are often considered a good indicator of living standards, have risen about 21% higher than pre-project levels. Dietary diversity indicators have also improved.

Communities reported other positive developments as a result of the DSP, including decreased poverty rates by 15% (from 20% to 5% over the reporting period) and increased ownership of household assets, with improved housing quality. Use of improved sanitation and water sources increased, while households with debt declined. On the other hand, the analysis found that incomes per capita had fallen.

Incomes, particularly from fishing, are difficult to measure and highly variable. Nonetheless, livelihood activities were reviewed and a more sustainable livelihood plan was prepared in all 92 villages that are most affected, those downstream and along the rivers, to further support restoration and sustainability of income. Livelihood Action Plans and individual household business plans were prepared and approved in early June 2017. In addition, the Poverty Reduction Fund (PRF) project is providing technical support to the provincial authorities on poverty targeting and livelihood planning.

Fish stocks and fish catch: Fish catch has been regularly monitored as part of the assessment of project impacts. NTPC has conducted regular assessments to verify abundance and variety of fish in anticipation of a reduction in fish stocks. These assessments indicate that the fish populations were declining prior to the start of operations, but have stabilized and in fact slightly increased since 2010. These results are corroborated by fish-DNA data from river water samples. At the same time, fish catch has declined, which may be the result of a number of factors, including alternative sources of livelihoods, or difficulty in fishing in the new high flow environment (i.e., poor adaptation of catch methods and equipment).

Erosion: NTPC carried out periodic riverbank monitoring to assess erosion both before and after the start of commercial operations. This monitoring suggests that after the start of operations, including an extraordinary flood event in 2011, the impact of riverbank erosion has not been as significant as anticipated. In areas of concern, the changes brought about by the NT2 project do not appear to be the underlying cause of erosion. Instead, erosion is caused by a number of factors including local geological conditions (i.e. weak sediment layers), river morphology (i.e., sharp bends), man-made structures built into the river beds (i.e. pump houses), and the extreme flooding event of 2011. However, NTPC will continue to monitor erosion as part of their corporate social responsibility, and the Government will maintain responsibility for downstream management, including riverbank protection.

Adaptive Management: The DSP includes an adaptive management system to monitor hydrology, water quality, erosion and livelihoods, and an Adaptive Management Committee (AMC), chaired by the Provincial Office of Natural Resources and Environment, tracks erosion and fish catch data and is responsible for adjusting mitigation plans as needed. The AMC was reactivated and resumed regular meetings in November 2016, after a period of inactivity since the responsibility for the DSP was transferred from NTPC to the GOL. Monitoring of erosion, fish catch, and downstream livelihoods will continue, conducted by NTPC, the AMC, and the provincial and district governments.

Grievance Redress Mechanism: The DSP includes a grievance redress mechanism (GRM), which has been institutionalized within the Government's existing GRM system. This mechanism is intended to enable villagers to raise issues that they believe may be related to the project. About 556 grievances were received and addressed during the DSP's lifetime (2006-2012), and about nine have been received since the DSP was handed over from NTPC to the provincial government from January 2013. The GRM has been institutionalized into the government system. However, more public information needs to be shared to ensure all villages are still aware of how to use it.

The 2017 DSP plans have been submitted from the provincial to the central government to ensure sufficient budget and resources for ongoing downstream support.